

MICHIGAN  
DEPARTMENT OF TRANSPORTATION  
  
SPECIAL PROVISION  
FOR  
**TURBIDITY CURTAIN**

C&T:LDT

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C&T:APPR:DMG:TWK:06-12-06

**a. Description.** This work shall consist of furnishing and placing a geosynthetic barrier totally enclosing construction activities within watercourses to confine sedimentation within the construction area. Provide a floating or staked turbidity curtain, not silt fence, for water depths as shown on the details attached. The turbidity curtain shall be a pre-assembled system, including the geotextile/geomembrane, connection and securing mechanisms, flotation devices, stakes, and ballast chain. The Contractor shall provide a system which meets this specification, appropriate for the site conditions such as depth (shown on plans), current, and wind or waves. Construct a turbidity curtain according to the Standard Specifications for Construction, this special provision, and the details as shown on the plans.

**b. Materials.**

**Geosynthetic.** The geosynthetic shall meet the minimum physical requirements for *Stabilization Geotextile*, except the permittivity (ASTM D 4491) requirement shall be 0.2 sec<sup>1</sup> maximum and the trapezoidal tear strength requirement shall be 50 pounds minimum. Geosynthetics may be polymer impregnated to negate permittivity and opening size requirements. Hemmed pockets shall be sewn or heat bonded to accommodate flotation devices and bottom weights. Panel ends shall have metal grommets placed through a reinforced hem. Connections between panels shall be tightly tied with synthetic or wire rope to prevent flow through the joint.

**Flotation.** Flotation devices shall be closed-cell polystyrene. The buoyancy (volume) required will depend upon site conditions; however, sufficient freeboard shall be provided to prevent overtopping.

**Stakes.** Stakes, when used to assist in maintaining alignment of the curtain, shall be hardwood or steel with sufficient length and cross-section to support the curtain. External supports may be used; however, embedment depth shall not be less than 1.5 feet. Stake spacing shall not exceed 6.5 feet.

**Hardware.** All hardware such as stakes, ballast chain, connection bolts, reinforcement plates, and tension cables shall be galvanized, stainless steel, aluminum, or otherwise corrosion resistant. The ballast chain shall have sufficient mass to maintain the geosynthetic in a vertical position, but shall not be less than 0.7 pounds/foot.

**c. Construction.** The turbidity curtain shall be placed according to locations shown on the plans, details, and according to the manufacturer's published installation guidelines or as directed by the Engineer. In streams, the turbidity curtain shall be placed parallel to flow. The turbidity curtain system shall be selected to handle site-specific drainage or flow patterns. The Contractor shall be responsible to provide and maintain sufficient anchors, tie-downs, or other mechanisms to insure proper position and performance of the turbidity curtain.

In situations with extreme flow, the turbidity curtain may require a redirectional barrier on the upstream end such as concrete barrier wall to enhance performance. Any visible plume of cloudy water outside the protected construction area shall constitute inadequate performance of the turbidity curtain.

The Contractor shall immediately modify, adjust or repair any portion of turbidity curtain to correct inadequate performance and eliminate any sediment plume.

Turbidity curtains shall maintain continuous contact with the bottom throughout the entire construction area. Excess curtain shall lay without wrinkles on the bottom, turned towards the construction activity. The turbidity curtain shall be situated at the appropriate distance from the construction activity to avoid interference resulting in sediment discharge to the unprotected area.

The Contractor shall maintain the turbidity curtain until the construction activity within the watercourse is complete and the turbidity is reduced to acceptable levels as approved by the Engineer. Maintaining shall include keeping a tight alignment around the work area or shoreline and sediment removal as necessary.

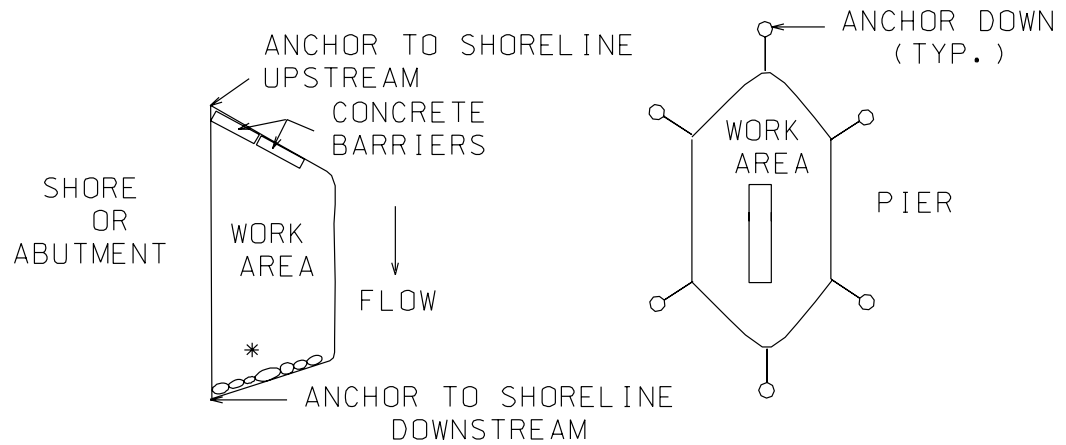
**d. Measurement and Payment.** The completed work as described shall be paid for at the contract unit price for the following contract items (pay items):

<b>Contract Item (Pay Item)</b>	<b>Pay Unit</b>
Turbidity Curtain (Shallow) .....	Foot
Turbidity Curtain (Deep) .....	Foot

The item **Turbidity Curtain (Shallow)** or **(Deep)** will be measured from the plan quantities and will be paid for by length in feet, measured linearly across the top of the curtain. Payment for **Turbidity Curtain (Shallow)** or **(Deep)** includes furnishing all material, labor, and equipment necessary to furnish, place and stake the Turbidity curtain (Shallow) or (Deep), maintain proper alignment, remove and dispose of sediment, remove the **Turbidity Curtain (Shallow)** or **(Deep)** and all appurtenances upon completion of the project.

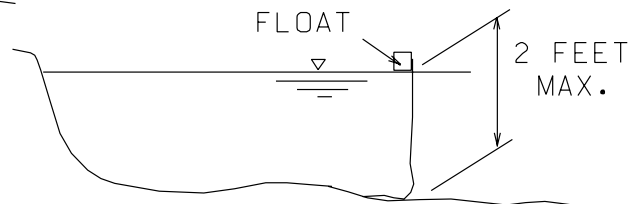
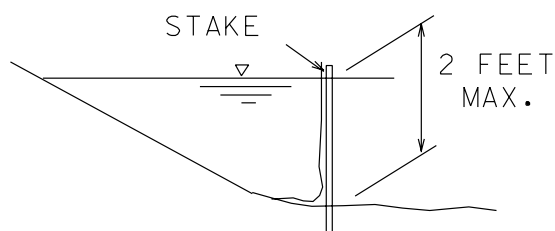
Install **Turbidity Curtain (Shallow)** when water depths are 2 feet or less, and install **Turbidity Curtain (Deep)** when water depths are greater than 2 feet.

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SHORELINE CONSTRUCTIONIN-STREAM CONSTRUCTION

\* PLACE ADDITIONAL WEIGHTS (AS NEEDED) ON DOWNSTREAM SIDE OF INSIDE BOTTOM FACE OF CURTAIN.

ANCHOR CURTAIN TO MAINTAIN STATIONARY LOCATION.

TURBIDITY CURTAIN (SHALLOW) SECTIONS

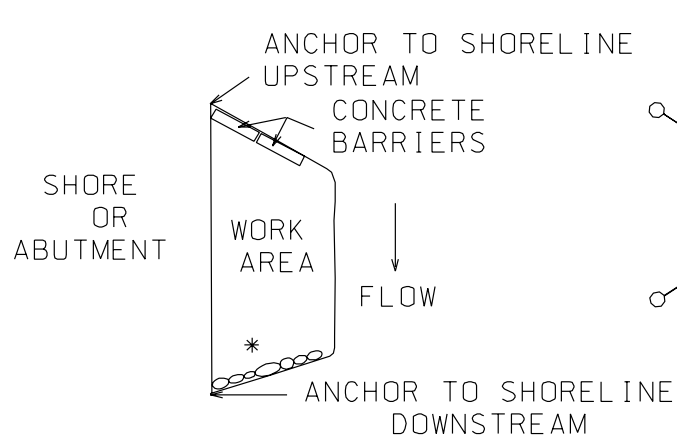
IN WATERCOURSE AREAS WHERE WATER IS 2 FEET DEEP OR LESS, TURBIDITY CURTAIN (SHALLOW) WILL BE USED. ANCHOR THE CURTAIN UPSTREAM AND DOWNSTREAM AS NEEDED TO SECURE IN PLACE.

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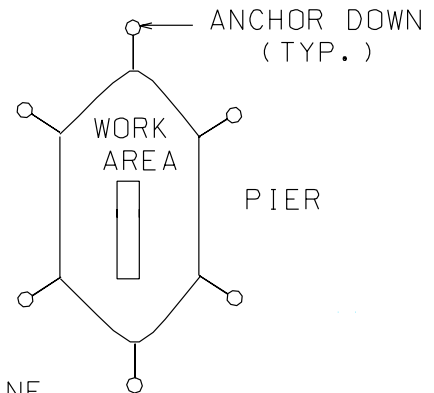
DATE 6/9/06

TURBIDITY CURTAIN (SHALLOW)

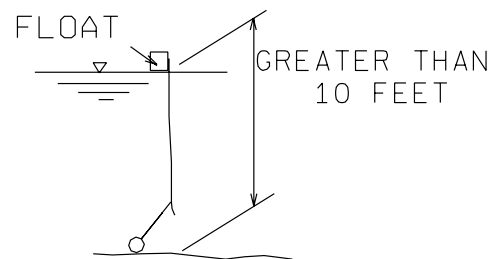
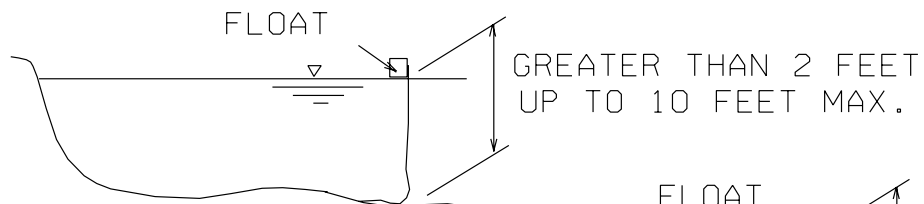
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SHORELINE CONSTRUCTION

- \* PLACE ADDITIONAL WEIGHTS (AS NEEDED) ON DOWNSTREAM SIDE OF INSIDE BOTTOM FACE OF CURTAIN.

IN-STREAM CONSTRUCTION

ANCHOR CURTAIN TO MAINTAIN STATIONARY LOCATION.

TURBIDITY CURTAIN (DEEP) SECTIONS

IN WATERCOURSE AREAS WHERE WATER IS GREATER THAN 2 FEET DEEP, TURBIDITY CURTAIN (DEEP) WILL BE USED. ANCHOR THE CURTAIN UPSTREAM AND DOWNSTREAM AS NEEDED TO SECURE IN PLACE.

FILE NAME: turbcurt.dgn

DATE 6/9/06

TURBIDITY CURTAIN (DEEP)